Behavior and Social Issues, 15, 101-124 (2006).

CONSUMER BEHAVIOR ANALYSIS AND SOCIAL MARKETING: THE CASE OF ENVIRONMENTAL CONSERVATION[1]

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ABSTRACT: Consumer behavior analysis represents one development within the behavior-analytic tradition of interpreting complex behavior, in which a specific conceptual framework has been proposed (i.e., the Behavioral Perspective Model). According to this model, consumer behavior occurs at the intersection of a consumer-behavior setting and an individual's learning history of consumption and is a function of utilitarian (mediated by the product) and informational (mediated by other persons) consequences. The model has been useful in analyses of consumers' brand choice and reactions to different settings. In the present paper, the model was applied to the interpretation of environmental deleterious behaviors (use of private transportation, consumption of domestic energy, waste disposal, and domestic consumption of water). This application pointed to specific marketing strategies that should be adopted to modify each of these operant classes.

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[1] Jorge M. Oliveira-Castro thanks the Brazilian institutions, CAPES (Ministry of Education), CNPq (Ministry of Science and Technology), and FINATEC (Fundação de Empreendimentos Científicos e Tecnológicos Brasília, DF) for financial support. Gordon R. Foxall thanks The Nuffield Foundation, London, for financial support (SGS/LB/0431/A and SGS/00493/G/S1). Some parts of the ideas presented here concerning the application of applied behavior analysis to environmental behavior have appeared in Foxall, G.R. (2002), Social Marketing for Environmental Conservation, In G. R. Foxall (Ed.), *Consumer Behaviour Analysis: Critical perspectives on business and management: Vol 3. Marketing: a behavioural perspective* (pp. 460 – 486), London and New York: Routledge. Correspondence concerning this article should be addressed to Jorge M. Oliveira-Castro, Instituto de Psicologia, Universidade de Brasília, Campus Universitário - Asa Norte, Brasília, DF 70910-900, Brasil, Telephone: +55 61 33072625, FAX number: +55 61 32738259, E-mail: jocastro@unb.br or Gordon R. Foxall, Cardiff Business School, Cardiff University, Aberconway Building, Colum Drive, Cardiff, CF10 3EU, Wales, UK, Telephone: +44 29 20 87 42 75, FAX number: +44 2920 874419, E-mail: FoxallG@cf.ac.uk.

KEYWORDS: consumer behavior, environmental conservation, social marketing, behavioral interpretation

Radical behaviorist interpretation of complex behavior—that which is not amenable directly to an experimental analysis—has taken two forms. The first, which we may call "top-down," is perhaps the more frequently encountered, and is the mainstay of Skinner's (1953) interpretations of economic, political and religious life—among other areas of application. It consists in suggesting surrogates of the elements of the three- or four-term contingency that might comprise responses of the kind controlled in the laboratory and the stimuli that would control them in such a closed setting. The behavior under interpretation, which typically occurs in a much more open setting, is then described as though it was predictable and controllable from a knowledge of the elements of the situation that have been labeled establishing operations, discriminative stimuli, reinforcers and punishers.

This broad-brush mode of interpretation lacks the detailed knowledge of the world that is to be interpreted, which is shown in the second kind of interpretive approach, "bottom-up." This is the mode of interpretation more likely be devised by persons whose initial training and expertise lies not in behavior analysis but in another sphere to which the concepts and, to some degree, the methods of behavioral science are subsequently applied. Economists, political scientists, philosophers and—for the purposes of this paper—marketing scientists might all look to behavior analysis to provide a plausible interpretation of their subject matter after they have mastered it, perhaps in terms of a theory quite distinct from that of radical behaviorism. We do not know for sure how common this mode is compared with top-down interpretation, but it is the method that brought *consumer behavior analysis* into being and that which we describe in this paper.

The aim must often be, through sensitivity to the realities of the subject matter, to introduce complexities of interpretation which could not have been anticipated by an experimentally-based analysis of behavior. The categories and definitions of variables used in experimental research may be insufficient to account for the complexities of real-world behavior; this is a world the practitioners of the disciplines who study it centrally know better than the experimentalists whose focus is entirely to be found within the lab. The extension of behavioral science concepts in this way is neither a deviation from nor a corruption of behavior analysis; it is a means of enhancing both it and its relevance to the world of social issues.

In this paper, we show a conceptual framework that can be used to interpret consumer behavior that harms the environment and discuss its empirical confirmation in the sphere of consumer behavior generally. We will also indicate

how it may be applied to and actively employed in social marketing programs aimed at the conservation of natural resources.

CONSUMER BEHAVIOR ANALYSIS AND THE BPM

Consumer behavior analysis has the agenda of applying basic behavioral laws and principles to real life consumer behavior. In doing this consumer behavior analysis models should be more able to accurately describe, predict and affect consumers. However, adding in the real life effects of consumer behavior will certainly make the resulting models more complicated.

One peculiar characteristic of consumer behavior is the fact it is usually simultaneously "reinforced" and "punished." It can be reinforced by the benefits obtained from products and services or by social approval, but it is simultaneously punished because the consumer has to surrender generalized conditioned reinforcers, such as money and rights, and to spend time and effort in the purchasing process (cf. Alhadeff, 1982). The Behavioral Perspective Model (BPM) is an operant framework for the interpretation of consumer behavior that takes into account this peculiarity by describing consumer behavior as a function of its consequences. The model proposes that consumer behavior is jointly determined by the consumer-behavior setting and an individual's learning history of consumption. The setting contains events in the consumption environment that signal the different consequences for different consumer responses. These events in the setting may be physical (e.g., alternative brands, point-of-sale advertisement), social (e.g., other shoppers, store staff members), temporal (e.g., store opening hours, short-term promotions), and regulatory (e.g., rules concerning shopping). They function as stimuli that signal to the consumer, based on his or her past learning history, the kind of consequences that are likely to follow each type of response, such as buying, postponing the purchase, accelerating the purchase, searching, and saving. One of the important dimensions of a consumer behavior setting is its scope, which can vary from relatively closed, presenting few alternatives to the consumer, to relatively open, presenting the consumer with many alternatives.

The model proposes that consumer behavior produces both utilitarian and informational consequences, both of which can be reinforcing or punishing. Utilitarian consequences are functional results of buying and using products and services: they derive from the practical application of the product itself in some consumption situation. They therefore reflect the value-in-use of a product or service, the economic, pragmatic or material consequences derived from acquiring, owning, and using it. For instance, the utilitarian reinforcers of an extended holiday in an exotic location may be related to the rest, relaxation and

recuperation it provides. This type of holiday may also generate some punishing utilitarian consequences, such as having to face a long and tiring trip and spending a lot of money.[2] As another example, one of the main utilitarian reinforcing consequences of owning a car is to be able to get door-to-door transportation, which any car can offer. Owning a car can also produce some punishing utilitarian consequences such as having to deal with its eventual breakdowns.

Informational consequences, however, are socially-derived and symbolic, depending above all on the actions and reactions of other people. They may consist of feedback on the performance of the individual as a consumer. They are verbal (or social) in the sense of being mediated by other persons (Skinner, 1957) and involve communication in the sense that behavior of one organism generates a stimulus that affects the behavior of another organism (Baum, 2005). Thus, while utilitarian consequences are related to the technical functions of products or services, informational consequences are related to social functions of acquiring and using products or services, such as social status and prestige associated to certain consumer behavior patterns.

An extended holiday on an exotic location may generate informational reinforcers such as the prestige and sense of accomplishment conferred by knowing that one can afford this kind of recreation and communicating the fact to one's friends, who might make admiring comments over the fact. This type of consumption may also produce informational punishers such as derisive comments from others that consider it to be excessively expensive, snobbish or culturally meaningless. Owning a car may also generate reinforcing informational consequences, such as the prestige associated to premium brands (e.g., buying a Bentley), or punishers, such as ecological reprimands for having bought a high-consumption sport utility vehicle.

The model proposes that every consumer behavior produces both informational and utilitarian consequences in variable levels. Keeping to the car example, driving a Bentley or a Mercedes may offer its owner prestige and social status, in addition to door-to-door transportation. Owning a car itself, independently of its make, might give its owner some social status, the degree of which will depend, primarily, upon the cultural and economic context in which the individual lives. But, in that same context, owning a Bentley will probably give its owner more social status than simply owing a common car. By the same

[2] Although the distinction between positive and negative reinforcement (and punishment) can be found in the literature to refer to presentation or removal of reinforcers (and punishers), respectively, the identification of such differences is not always easy and indisputable (cf. Catania, 1998). Moreover, considering that the present paper deals primarily with behavior occurring in natural, as opposed to experimental, settings, this distinction is not emphasized here.

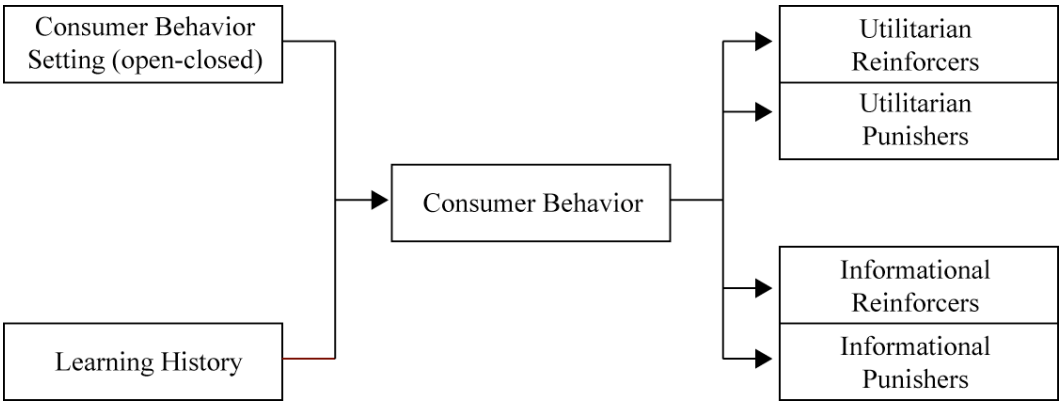

Figure 1. Schematic representation of the Behavioral Perspective Model (BPM).

token, a Bentley and a Mercedes will probably offer more utilitarian benefits (e.g., security items, longer warranty) than less prestigious makes, but even a Mercedes may be acquired with more or fewer utilitarian reinforcers (e.g., air-conditioning, leather seats).

The contact with behavioral consequences forms the consumer's learning history of reinforcement and punishment in a given situation, which interacts with the consumer behavior setting influencing the likelihood of a behavior taking place in the same or similar situations in future occasions. Figure 1 shows a basic schematic representation of the BPM and will be returned to later.

THE USEFULNESS OF THE BPM IN INTERPRETING CONSUMER BEHAVIOR

In all the examples of informational and utilitarian reinforcers and punishers given so far, we referred to events that usually have reinforcing and punishing functions for most people. This does not imply these functions should not be empirically tested for "the only way to tell whether or not a given event is reinforcing to a given organism under given conditions is to make a direct test. We observe the frequency of a selected response, then make an event contingent upon it and observe any change in frequency. If there is a change, we classify the event as reinforcing to the organism under the existing conditions" (Skinner, 1953, p. 72-73).

When dealing with consumer behavior, however, research and managerial interests frequently lie in identifying what functions as reinforcement to large groups of people and, in the large majority of cases, this has to be done on the basis of observational, rather than experimental data. This may increase some

already existing ambiguities in defining different types of reinforcement. As there can be ambiguity in analyzing reinforcement as positive and negative (e.g., Catania, 1998) or as primary and secondary (e.g., Baum, 2005), there can also be ambiguity in evaluating with precision the utilitarian and informational effects on consumer behavior and their possible interactions. As applies to the terms of positive/negative and primary/secondary, the differentiation of utilitarian and informational consequences should be used as long as it gives the researcher or practitioner economical and comprehensible descriptions of consumer behavior (cf. Baum, 2005). In what follows, we describe some research projects on consumer behavior analysis that may illustrate the usefulness of distinguishing between utilitarian and informational consequences and of analyzing the scope of consumer behavior setting.

Consumer Brand Choice

The marketing literature suggests that, when purchasing *fast moving consumer goods* (fmcgs), consumers have a repertoire of two to four brands in each product category from which they select, as if randomly, on each shopping occasion (cf. Ehrenberg, Uncles & Goodhardt, 2004). Early consumer behavior analysis work studied the issue of repertoire buying through the development of methodologies based on behavioral economics, specifically matching, maximization and demand processes (see for example Foxall & James, 2001; Foxall & Schrezenmaier, 2003). In summary, the results suggested that consumers will buy the cheapest brand within their repertoire although this is not always the cheapest of all the brands available. This indicates that brands within a given product category are not all functionally substitutable. One possible source of non-substitutability among brand may be based on the level of utilitarian and informational reinforcement (as discussed previously) they offer to consumers (Foxall, 1999).

Brand Choice: Informational and Utilitarian Reinforcement

Based on this distinction between utilitarian and informational reinforcement, which suggests different types of reinforcers influence consumer choices, Foxall, Oliveira-Castro and Schrezenmaier (2004) examined whether consumers' brand repertoires (patterns of repertoire buying as discussed above) are related to the levels of utilitarian and informational reinforcement offered by the brands. The authors based their analyses on purchase data from a sample of 80 consumers buying nine products (i.e., baked beans, cookies, breakfast cereals, butter, cheese, fruit juice, instant coffee, margarine, and tea) during a period of 16 weeks. This

80-consumer sample was randomly selected from a national (UK) consumer panel (TNS Superpanel).[3]

In order to investigate possible effects of informational and utilitarian reinforcement values on brand choice, the brands bought by the sample during the 16-week period in each product category were classified according to the level of informational and utilitarian reinforcement they offered. Brands and product characteristics found within supermarket product categories were interpreted as sets of programmed contingencies of reinforcement, which specify what responses (e.g., how much one has to pay) are followed by what consequences (e.g., product characteristics). Most marketing activities, according to this interpretation, are related to planning and programming reinforcement contingencies for the behavior of consumers. Considering programmed contingencies may not work as planned, empirical research is usually conducted to evaluate the actual effects of planned contingencies.

As there are no general units to measure utilitarian and informational reinforcement levels, a forced ranking system was adopted in which three informational and two utilitarian levels were ascribed to each product category. Utilitarian levels were identified based on additional attributes (e.g., plain baked beans vs. baked beans with sausage) and/or differentiated types of products (e.g., digestive cookies[4] vs. chocolate chip cookies). In the case of differentiated product types, several general brands usually offer the different product formulations, charging different prices for them (e.g., digestive cookies are cheaper than chocolate chip cookies for all brands examined).

The ranking of informational reinforcement level was based on the idea that this is closely associated to brand differentiation, which in turn is usually also related to price differentiation. If one compares the level of brand differentiation of, for instance, Asda (Wal-Mart) Smart Price© and Kellogg's©, as brands producing breakfast cereals, Kellogg's© is clearly a better known, more differentiated cereal brand. It also offers a more expensive product. This kind of difference among brands was interpreted as differences in informational reinforcement level.

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[3] Consumer panels consist of groups of volunteers that record their purchases and consumption of certain product categories (e.g., supermarket products) and report such information to market research firms, who sell the data to retailers, producers and researchers. These panels are usually maintained for several years and include representative samples of the target population (e.g., UK consumers). Most current panels use automated recording systems (e.g., home scanner devices attached to a computer).

[4] Digestive cookies are semi-sweet biscuits made of wholemeal flour common in the UK.

The ranking of informational reinforcement level was based on the following general criteria: 1) increases in prices across brands for the same product type (e.g., plain baked beans or plain cornflakes) were considered to be indicative of differences in informational levels; 2) the cheapest own brands[5] (e.g., Asda Smart Price©, Tesco Value©, Sainsbury Economy©) were considered to represent the lowest informational level (Level 1); 3) own brands that do not mention good value for money or economy (e.g., Asda©, Tesco©, Sainsbury©) and cheapest specialized brands were usually considered to represent the medium informational level (Level 2); and 4) specialized brands, with higher prices (e.g., Heinz©, Nescafe©), were considered to represent the highest informational level (Level 3).

The authors classified all brands according to these criteria and asked two independent judges to do the same. The level of reliability of this classification was satisfactory (more than 70% of brands across all products and the two judges were classified under the same utilitarian/informational level) (cf. Oliveira-Castro, Foxall & Schrezenmaier, 2005). Based on this classification, Foxall et al. (2004) observed the majority of consumers made 70% or more of their purchases in each product category within brands belonging to the same informational level. The authors reported similar findings for utilitarian level of reinforcement, where, for most consumers (with the exception of cookies), 70% or more of purchases were concentrated within brands at the same level of utilitarian reinforcement. These results suggest that consumers' brand repertoires are chosen, at least in part, on the basis of the level of informational and utilitarian reinforcement programmed by the brands.

When consumers were classified in six different groups according to the utilitarian and informational level of the brands they bought mostly (Group 1: Informational Level 1 and Utilitarian Level 1 to Group 6: Informational Level 3 and Utilitarian Level 2), Foxall et al. (2004) discovered that consumer groups differed with respect to their price demand elasticity. That is, they differed with respect to how much they changed the quantity they bought as a function of changes in brand price. The group of consumers that bought mostly brands belonging to the lowest level of utilitarian and informational reinforcement (Group 1) and the group that bought mostly brands belonging to the highest level of utilitarian and informational reinforcement (Group 6) showed the lowest demand elasticities, that is, they showed the smallest decreases in quantity bought as a function of increases in brand price. Group 2 (Informational Level 1 and

[5] An own brand is a product manufactured specially for a retailer and bearing the retailer's name. They are not available in any competing retail outlet unlike large brands, for example Heinz, which is available in most retailers. The equivalent in the US is a private brand (rather than a national brand).

Utilitarian Level 2) showed the highest demand elasticity, which decreased systematically as the group number increased (from 2 to 6).

The authors also decomposed overall group elasticities into intra-brand elasticity (buying larger quantities of Brand A when Brand A is cheaper), inter-brand-utilitarian elasticity (buying smaller quantities of Brand B, which is more expensive than Brand A and offers more utilitarian reinforcement), and inter-brand-informational elasticity (buying smaller quantities of Brand C, which is more expensive than Brand A and offers more informational reinforcement). Taken together, the results suggested the occurrence of at least three different patterns of brand choice across groups: 1) minimizing costs by choosing predominantly the cheapest brands independently of informational and utilitarian levels (Group 1), 2) maximizing utilitarian reinforcement within each level of informational reinforcement (Groups 2, 4 and 6), and 3) maximizing informational reinforcement (Groups 2 to 6, increasingly) (cf. Foxall et al., 2004). Further analyses of decomposed demand elasticity of all consumers also showed that, for the nine supermarket food products investigated, intra-brand elasticity was higher than utilitarian elasticity, which, in turn, was higher than informational elasticity (Oliveira-Castro et al., 2005). These results suggest that, for fast-moving consumer goods of the type investigated here, consumers' brand choices are influenced by price, utilitarian reinforcement and informational reinforcement, in that order of importance. Knowledge of the events that function as reinforcers for consumers allows researchers and managers to make predictions about their behavior.

Another method of measuring informational reinforcement level of brands was developed by Oliveira-Castro, Pohl and Dias (2006). The authors elaborated a simple questionnaire which asked consumers to rate, based on a four-point scale, the levels of popularity and quality of each brand within product categories. By averaging the scores for popularity and quality, obtained across samples of more than 120 consumers, the method ascribed a single score, ranging from 0 to 3, to each brand. This final score has been interpreted as a measure of informational reinforcement level of each brand, as perceived by consumers. After this, the authors examined the possible relations among brand market share, price, and informational level for nine different supermarket products (i.e., fabric softener, laundry powder, coffee, margarine, canned corn, soy bean oil, chocolate milk, black beans, and washing-up liquid).

For seven products, results showed significant, positively accelerated increases in market share as a function of increases in informational level, and non-significant decreases in market share with increases in prices (brand with higher informational levels tended to have higher prices). Thus, for these seven

products, increases in informational level were associated with positively accelerated increases in total brand revenue. For two other products (black beans and canned corn), neither market share nor prices were significantly related to informational level. In other words, these two products behaved as primary commodities, whose reinforcing value for the consumer does not increase with increases in informational level (or brand differentiation). These results illustrate, once more, the usefulness of the distinction between utilitarian and informational reinforcement proposed by the BPM, a model that provides a consistent conceptual framework for the interpretation of consumer behavior in general and the identification of events that function as reinforcers for different groups of people under different conditions.

The Scope of the Consumer Behavior Setting

Alongside informational and utilitarian reinforcement, the scope of the behavior setting is an important variable in the BPM. According to the BPM, behavior is a function of the consumer situation. From the work of Schwartz and Lacey (1988) it has been proposed that purchase and consumption activities occur in a continuum which ranges between relatively open to relatively closed consumer behavior settings.

A relatively closed setting is such as the post office in which the purchase of government-issued postage stamps is the only means available to the consumer for sending a written communication. On the other hand, a department store is more characteristic of a relatively open setting where the consumer has a great range of products to choose from. In the relatively closed setting, persons other than the consumer arrange the discriminative stimuli that compose the setting in a way that compels conformity to the desired behavior, and this is achieved by making reinforcement contingent on such conformity. In this case, the consumer is acting according to the rules or instructions devised and presented by others in order to avoid or escape the aversive consequences she might face otherwise. Conversely, the relatively open setting does not constrain the consumer, who, thus, has greater choices. Therefore, in this case, the consumer is acting on self-instructions, under the control of positive reinforcement (feeling of freedom, a sense of being in personal control of his behavior) and in which his approach behavior is difficult to predict (Skinner 1971). Also difficult in this environment is to isolate the positive reinforcers that might be the exact causes of the consumer's current behavior.

Studies testing the importance of scope in behavior settings (as well as levels of utilitarian and informational reinforcement) have employed Mehrabian and Russell's (1974) pleasure, arousal and dominance (PAD) scales. The dominance

(dominance-submissiveness) dimension ranges from extreme feelings of lack of control or influence upon one's surroundings to feelings of being influential and powerful, or in control. Empirical studies have shown the significantly high power of the dominance dimension in discriminating between open/closed consumer behavior settings (Foxall & Greenley, 1998, 1999, 2000; Foxall & Yani-de-Soriano, 2005; Soriano, Foxall & Pearson, 2002).

In addition, the notion that in a relatively open consumer behavior setting, the individual is relatively free to determine his *own* choices finds support in recent consumer research. In their study of control and empowerment, Wathieu et al. (2002) challenged the traditional economic view which assumes that "a larger choice set would constitute an improvement of a consumer's situation" and their findings showed that certain kinds of choice set expansions may cause aversive behavior in consumers, which is explained by self-control, regret and overload mechanisms. Finally, in a relatively open consumer behavior setting the consumer feels more autonomous and his subjective perception of control has a positive impact on his long-term well-being (Langer and Rodin, 1976; Langer, 1983).

A BEHAVIORAL CLASSIFICATION OF CONSUMER CHOICE

Working with the proposed bifurcation of utilitarian and informational reinforcement already described, the BPM suggests that four operant classes of consumer behavior can be described according to the pattern of reinforcement (i.e., high/low utilitarian and high/low informational) which maintains it. These are shown in Table 1. Behaviors classed as *accomplishment* are maintained by high levels of both utilitarian and informational reinforcement and may include conspicuous consumption behaviors such as buying status cars.

Behaviors classed as *hedonism* are characterized by high levels of utilitarian reinforcement and are usually reinforced by entertainment—for example, watching popular TV programs might be placed in this category. Behaviors reinforced negatively by the removal of a utilitarian aversive stimulus, such as taking an aspirin for a headache may be included here.

Behaviors classed as *accumulation* are principally reinforced by informational reinforcement and may include collecting trading stamps or points in a loyalty program (for a supermarket) or being involved in a token economy (where the environment is more closed).

Behaviors classed as *maintenance* are routine behaviors necessary to sustain one's physiological being (eating, sleeping) and to function as a member of a social group, or a citizen in society (paying taxes for inescapable consumption or getting a passport). In maintenance, levels of utilitarian and informational rein-

TABLE 1. OPERANT CLASSES BASED ON THE LEVELS OF UTILITARIAN AND INFORMATIONAL REINFORCEMENT.

	High Utilitarian Reinforcement	Low Utilitarian Reinforcement
High Informational Reinforcement	ACCOMPLISHMENT	ACCUMULATION
Low Informational Reinforcement	HEDONISM	MAINTENANCE

forcement are substantially lower than for the other classes of behavior, but are far from unimportant and may be controlled negatively by the removal of a threat. A more detailed discussion and interpretation of the four operant classes can be found in Foxall (1990, 1993, 1994).

These operant classes can be operationalized alongside the scope of the setting to produce eight separate contingency categories to analyze a broad range of behaviors. These categories are summarized in Table 2.

BEHAVIOR ANALYTIC RELEVANCE TO ENVIRONMENTAL CONSERVATION

So far this paper has presented a behavioral analytic approach to complex behavior and how this has been utilized in consumer choice situations. A bifurcation of reinforcement has been described, taking into account the more complex nature of human reinforcement; and this approach has been applied to current behavioral research in consumer choice environments. The importance of the scope of the behavior setting has also been explored.

Environmental problems and detrimental consumer choices resulting from patterns of consumerism, encouraged by mass advertising, such as atmospheric pollution, waste disposal and resource depletion have multiple causes and require composite responses (van Raaij, 1988). Because of this, solutions lie beyond the scope of any single discipline. Modern marketing thought fully supports the

TABLE 2. CONTINGENCIES CATEGORIES BASED ON THE BPM (ADAPTED FROM FOXALL, 1998, P. 104).

relatively open BEHAVIOR SETTING	*relatively closed BEHAVIOR SETTING*
ACCOMPLISHMENT	ACCOMPLISHMENT
Contingency Category 1- Extended consumer behavior, e.g, search and evaluation for status symbols (innovations, luxuries)	Contingency Category 2- Excitement and fulfillment, e.g, casino gambling, personal development training
High informational reinforcement	High informational reinforcement
High utilitarian reinforcement	High utilitarian reinforcement
HEDONISM	HEDONISM
Contingency Category 3- Popular entertainment, e.g, listening to popular music, watching TV game show/variety show	Contingency Category 4- Inescapable Entertainment/Alleviation of Personal pain, e.g, watching in-flight movie, taking headache remedy
Low informational reinforcement	Low informational reinforcement
High utilitarian reinforcement	High utilitarian reinforcement
ACCUMULATION	ACCUMULATION
Contingency Category 5- Collecting, e.g, installment buying, Christmas club saving	Contingency Category 6- Token Economy based buying, e.g, accumulation of 'air miles'
High informational reinforcement	High informational reinforcement
Low utilitarian reinforcement	Low utilitarian Reinforcement
MAINTENANCE	MAINTENANCE
Contingency Category 7- Routine Purchasing of Socialized Economic Necessities, e.g, supermarket grocery shopping, having a dental check-up	Contingency Category 8- Regular Mandatory Purchase/Consumption, e.g, paying taxes, buying TV license or passport
Low informational reinforcement	Low informational reinforcement
Low utilitarian reinforcement	Low utilitarian reinforcement

application of marketing mix[6] elements to areas of social and political resource allocation (Bloom & Novelli, 1981; Fox & Kotler, 1980; Kotler & Zaltman, 1972). When marketing is directly responsible for abuses of the environment, social marketing or de-marketing may provide ways of reversing their effects. However any marketing/de-marketing strategy undertaken to affect environmental behavior must link with both the micro level aspects of consumer choice and the activities of marketing firms with the macro level of public policy and regulation.

Social marketing issues in isolation are unlikely to provide the required integrative framework for understanding the ways in which consumer behavior impacts deleteriously on the environment and for suggesting remedial action. This is firstly because commercial marketing is generally a short-term activity unlike environmental problems which have a long-term duration and effect. Largely there has been an over reliance on textbook marketing principles which have in the main been developed with fast moving consumer goods and are therefore not appropriate in this context. For example the behavior change needed to buy a different brand of soap is not huge whereas the modification of environment-impacting consumer behavior imposes major costs and must overcome considerable obstacles to change.

Social-marketing programs have also been critiqued on the grounds they do not generally use the fully integrated marketing mix but rely to a disproportionate extent on social advertising. Secondly, there has been an over reliance on cognitive theoretical perspectives, which have generally failed because of a lack of attitudinal-behavioral consistency. For example, although consumers know in detail about the ecologically deleterious effect of much of modern consumption and are generally relatively knowledgeable, they do not, on the whole, bring this behavior in line with the more rational patterns advocated by conservationists (Constanzo, Archer, Aronson, & Pettigrew, 1986). Lehman and Geller (2004) note that although there has been continued interest in the behavior basis of environmental conservation, the peak of this type of research was in the 1970s, when the first Earth Day served as an activator. Consequently environmental attitudes research at this time flourished. The behavior analytical models discussed above are likely to provide a better basis from which environmental behavior can be promoted and maintained.

[6] Jobber (2004, 912) defines the marketing mix as "a framework for the tactical management of the customer relationship, including product [attributes, packaging etc], place [distribution, for example through retail stores or the internet], price and promotion [advertising, public relations etc] (the 4-Ps)". He also suggests that in the case of service marketing three other elements should be included: process, people and physical evidence.

APPLIED BEHAVIOR RESEARCH AND ENVIRONMENTAL BEHAVIOR

A behavior analytic approach would suggest that demand for products or services which have adverse effects on the physical environment is controlled by the consequences of consumer behavior. Previous reinforcing consequences will make the behavior more likely to be repeated and similar behavior will be more probable now and in the future. Punishers reduce the frequency of the behavior that produced them. Antecedent factors also affect the rate at which behavior occurs, for they signal the reinforcing (or punishing) consequences likely to follow the performance of a particular act. At its simplest, a consumer behavior can be stated as A:B:C, where A=Antecedents, B=Behavior and C=Consequences. The colons imply that the variables are related probabilistically; the existence of an antecedent does not automatically lead to the specified behavior; nor does the reward of that behavior on previous occasions make its repetition inevitable now (Blackman, 1980).

However, as mentioned previously, consumer behavior is frequently more complicated than this as it is simultaneously reinforced and punished. For example, buying a brand can be reinforced by gaining the attributes of the product and by consumption, but punished by the surrender of money. The loss of which deprives the buyer of other opportunities (Alhadeff, 1982). In environment-impacting behavior, the reinforcers of purchase are usually immediate and private while the punishments are delayed and public. The unrestricted acquisition of short-term reinforcers by a limited number of individuals can result in substantial long-term aversive consequences for all users. Hardin (1968) suggests that, in the short term, positive components of the situation will outweigh the negative components for each individual, leading to each of us damaging the environment. In the long term, the build up of each individual's actions will result in devastating environmental damage that affects the whole population.

Previous applied behavior research in environmental behavior has concentrated on and incorporated three broad types of antecedent and consequent stimuli. Antecedents have consisted of prompts, such as warnings, reasoned argument and facts, threats, relating to the deleterious effects of actions that exploit or pollute the environment which are an attractive intervention due to their low cost (Lehman & Geller, 2004). These antecedents are designed to act as discriminative stimuli, signaling the aversive consequences of specific behaviors that impact on the environment for all.

Consequential stimuli have consisted of feedback, such as specific/personal information on the actual effects of individuals' actions (e.g. levels of reduction of his/her electricity consumption or private car mileage), and incentives, such as

financial bonuses, praise and encouragement (e.g., reward with additional consumption goods or the capacity to acquire them for pro-social behaviors).

Generally strong links have been found between conservation behavior and its consequences, and incentives have commonly the strongest immediate influence on the behavior, at least in the short term. Incentives used alone have more effect than feedback used alone. Feedback in the form of education and information is expected to be more successful as a strategy when it is tailored to fit a specific situation (Lehman & Geller 2004). In turn, feedback has a more far reaching effect than does prompting (antecedents). Also it has been found that prompts have an extremely limited effect if incentives are not presented closely tied in to the performance of specific conservation behaviors.

Some of the most effective interventions involve the use of incentives and feedback in combination, supported where feasible by prompts that use rules to link definite conservation responses to the rewards they will produce for the individual consumer. For reviews of applied behavior research on consumers' conservation choices and behavior see Cone and Hayes (1980), Dwyer, Leeming, Cobern, Porter, and Jackson (1996), and Everett and Watson (1987).

In summary, previous applied behavior analyses have revealed and supported two types of consequences: incentives and performance feedback. These two types align well with the two forms of reinforcement discussed earlier: Utilitarian and Informational Reinforcement. Both utilitarian reinforcement and incentives are based around more tangible reinforcers and are personal in nature, in the sense of not depending on other persons. Some authors have argued their capacity to reinforce behavior lies in the feelings of pleasure, fun, fantasy, amusement, arousal, sensory gratification, imaginative, appreciation and enjoyment which they engender directly or indirectly in their recipients (Hirschman & Holbrook, 1982; Holbrook & Hirschman, 1982). Although these terms would not be used in a typical behavior-analytic interpretation, they seem to stress that utilitarian reinforcers are mediated by the product or service itself. That is, they depend upon the relation between the consumer and the product or service rather than on the behavior of other persons. Both incentives and utilitarian reinforcement are, in this sense, intrinsically motivating, personal and private.

Performance feedback and informational reinforcement also align well. These non-utilitarian reinforcers function informationally as feedback on the quality and quantity of reinforcement; and in the case of consumer behavior, informational reinforcement may consist of recognition of one's progress as a consumer and reflect in the acquisition of symbols of social and economic achievement. Both feedback and informational reinforcement are a measure of how well the person is doing and are largely extrinsic. It is generally expected that environmental

conservation behavior would be influenced primarily by informational consequences ("doing the right thing," "being ecologically correct") without clear utilitarian gain for consumers and, what makes things worse, they usually involve some utilitarian loss for them. For example, products that are ecologically correct (e.g., organic products) are usually more expensive (at least for supermarket products or fast moving consumer goods) than traditional products resulting in more financial losses. Considering the results discussed earlier which suggest consumers' choices for supermarket products are influenced by price, utilitarian reinforcers and informational reinforcers in that order, it is not surprising that informational consequences alone do not always have a substantial effect on preservation behavior.

Foxall (1994) suggests informational reinforcers may derive their power ultimately from their association with the utilitarian consequences of behavior, which may account for the successful synergistic effect of incentives and feedback in combination. Moreover, the symbolic, verbal reinforcers in informational feedback are related to the tendency for human behavior to be rule-governed as well as shaped by direct consequences (Hayes, 1989; Skinner, 1969). This would account for the ability of specific prompts, acting as instructions for pro-social behavior, to increase the motivational effect of utilitarian/incentives and informational/feedback consequences.

REFINING THE PROBLEM

Each operant class of behavior within the BPM framework has so far been described positively, but each does have a down side. Especially in affluent, marketing-oriented societies, consumers seek ever-greater *accomplishments* based on both intrinsic utilitarian benefits and extrinsic proof of their social status often resulting in the consumption of scarce and irreplaceable resources. For example, private-car ownership and use results in depletion of fuel and damage to the environment. Pleasure seeking (*hedonism*) may affect the environment through indulgent energy consumption, and *accumulation* brings with it the need to dispose of packaging and surplus materials. Finally, *maintenance*, consumption of the basic commodities themselves such as water and fossil fuels, now threatens further consumption by depleting stocks. These behaviors and their typical reinforcers and aversive environmental consequences are summarized in Table 3.

In developing strategies and de-marketing to reduce the negative outputs of these behaviors, marketers must first have an understanding of how the current behavior is maintained by a combination of utilitarian and informational consequences (the pattern of reinforcement outlined in Table 4), and how this affects consumers' behaviors. Secondly, marketing-mix strategies need to provide

TABLE 3. CONSEQUENCES OF ENVIRONMENT-IMPACTING CONSUMPTION.

	Utilitarian	Informational	Aversive
Private transportation	Control, privacy, quiet, speed, fun, safety, protection	Travel time reduction, cargo capacity, predictability, status	Traffic congestion, stress, costs of purchase, maintenance
Bus-riding/Public transport	Social contact, healthiness, reading opportunity	Cost savings, fitness, pro-social	Slowness, fares, exposure, crowds inflexibility, lack of control
Domestic energy use	Comfort, convenience	Status, level of warmth	Charges
Waste Disposal	Ease of disposal	Conspicuous consumption, prestige, social status approval	Social disapproval, loss of aesthetic benefits
Domestic Water use	Satisfaction, ease, cleanliness, hygiene	Status, prevention of disease, social approval	Taxes, charges, rationing, pricing, metering

appropriate levels of informational and utilitarian reinforcement whose order of importance needs to be determined for groups and situations. For example, if specific classes of consumer behavior are maintained by defined patterns of high versus low utilitarian and informational reinforcement, intervention should be expected to succeed when it maintains current levels of reinforcement or increases the level of one source of reinforcement without reducing that of the other.

Specific demarketing strategies and marketing-mix strategies can be developed for each of the classes of operant behavior, each using one example of a type of problem environmental behavior. These are summarized in Table 4 and are now discussed further.

Accomplishment: A Problem of Private Transport

Applied behavior analysts have often been concerned with the environmentally-impacting behavior of the use of private transportation. Previous

TABLE 4. SUMMARY OF DE-MARKETING STRATEGIES FOR ENVIRONMENTAL PROBLEMS

Source of environmental problem	Class of consumer behavior	Principal marketing mix element	Proposed demarketing strategy
Excess use of private transportation	Accomplishment	Product	Provide similar/compensating product benefits incorporating both *incentives* (e.g. faster travel system) and *feedback* (e.g. on costs no longer incurred)
Over-consumption of domestic energy	Hedonism	Promotion	Provide detailed and sensitive *feedback* on recent/current energy use levels and costs; maintain pleasurable effects of energy use (*incentives*)
Indiscriminate waste disposal	Accumulation	Place	Provide means of dealing with litter and other waste where problem arises (*incentives*), plus *feedback* on progress
Over-consumption of domestic water supply	Maintenance	Price	Charge directly for water use (*disincentive* to excessive use); meter water consumption to provide *feedback* on current usage levels and costs

research has suggested the behavior is maintained by high levels of both utilitarian reinforcement: the fun of driving, control of one's journey; and informational reinforcement: speed, low and flexible journey times—and can therefore be categorized as accomplishment behavior. With this knowledge, a number of demarketing strategies can be developed. With both high levels of utilitarian and informational reinforcement, any demarketing strategy should attempt to replace or maintain these.

Effective competition to driving must be made available, for example, by making buses and other forms of public transportation more popular, comfortable, socially acceptable and quicker, if possible. General prompts are unlikely to work alone but rules which link specific behaviors and their outcomes may be effective.

Such rules should stress the reinforcers for bus riders in terms of the personal gratification this provides rather than vague predictions of a remote better environment for all. Any attempt at punishing motorists through taxes and tolls is likely to be counterproductive, since the high levels of both utilitarian and informational reinforcement available from driving will compensate for attempts at punishment.

An appropriate marketing-mix strategy would concentrate on the product available and the strengthening of the utilitarian and informational reinforcement available from it. It may be the case that a brand new product is a necessity to fulfill this. The price of a new product would be important as car purchases are often driven by conspicuous consumption. Once a new product is established, the price of the old product could be increased to punish its usage. Until this point is reached however, such a price rise would have little overall effect on demand for the product, given the abundant utilitarian and informational reinforcers.

Prompts in the form of promotion are unlikely to have a large effect, although if coupled with effective consequential stimuli, they may provide a necessary informative and persuasive role. The factor of place could be used by opening the behavior settings and making it more open to competition and making any new product widely and easily available.

Products are already being developed which may help the problem. Hybrid technology cars are now available which do not harm the environment as much as cars with traditional engines. These cars provide the normal utilitarian benefits, such as the fun of driving and control of ones journey, but this may be reduced slightly due to the often higher initial cost of these vehicles. Informational reinforcement would also be about the same. However, as these types of vehicles do still cause damage to the environment, albeit to a much lesser extent, they are by no means a final solution.

Hedonism: A Problem of Domestic Energy Consumption

The use of domestic energy is based on consequences which include convenience and comfort, and so are generally maintained by high levels of utilitarian reinforcement. While informational reinforcement (or feedback) is less obvious, it may be important in social situations where visitors are also affected by usage. In previous research, both incentives and feedback have been used alone and in combination to reduce domestic energy consumption with an indication that incentives have the largest effect (cf. Hayes & Cone, 1977; Winett, Neal & Grier, 1979).

Punishment, as in the case of accomplishment, for example by raising prices, is unlikely to work because the high utilitarian reinforcement will compensate for

the rise in price. Any strategy needs to maintain the high levels of utilitarian reinforcement. It has been suggested, and supported through success in some studies, that any social demarketing in this area should concentrate on making the behavior more involving by helping people avoid high bills and encounter self-gratification behavior at saving energy and reducing pollution.

In terms of a marketing-mix strategy, the principal element would be promotion entailing effective and informative communication with the consumer. The required modification of consumer behavior is most likely to be achieved through the provision of increased, relatively rapid and regular information on consumption. This should be included as part of the product provided by the energy companies. In terms of place, consumers should be encouraged to make personal and domestic arrangements which promote thermal savings (e.g. better insulation and the elimination of useless energy consumption such as the illumination of unused rooms).

Accumulation: A Problem of Waste Disposal

Waste disposal is classed as accumulation but the problem is actually manifested in the opposite of accumulation: disposal. Indiscriminate waste disposal has relatively few utilitarian reinforcers other than convenience, but its informational outcomes are extensive if subtle. It confers status through the assumption that someone else will clear up, and it may also imply conspicuous consumption. Intervention may take the form of increasing informational reinforcement by linking the individual's attempts at recycling or saving resources and feeding this information back to them.

Showing the pro-social consequences of conformity has also been put forward as a possible intervention as it increases the personal element. The most appropriate marketing-mix strategy would concentrate on place. This is because litter itself is a discriminative stimulus for further littering (Tuso, Witmer & Geller, 1975) and the provision of bags, bins and other containers that encourage correct disposal is likely to have a cumulative effect on behavior. Prompts in the form of promotion can be used to show what to put, where to put and when to put of disposal (Geller, 1973). Utilitarian reinforcers can be maintained by making disposal methods convenient, and punishment can be reduced through financial recompense or lower costs for returning bottles or other recyclable materials.

Maintenance: A Problem of Domestic Water Consumption

In the case of domestic water consumption (classed as maintenance) both utilitarian and informational reinforcers are low, compared to the other class of

consumer behavior but are not absent. They are related to the consumer's state of deprivation, as domestic water consumption allows us to drink, clean and wash which are basic human needs. Due to the low levels of both reinforcers it may be the case that the most successful intervention strategy might be punishment. The utilitarian and informational positive consequences are not strongly motivational, so an increase in price would be particularly effective.

A strategy affecting informational consequences in terms of feedback may also be effective. For example, water metering technology could be installed providing regular feedback on consumption. In line with these two interventions, price would be the most effective marketing-mix element, especially as water is relatively inelastic. This should however be used alongside recommendations of water conservation methods such as smaller cisterns, use of rainwater and less purified water.

CONCLUSION

In order to develop efficient strategies of environmental conservation, we need to identify the variables that influence consumer behaviors that produce unwanted environmental impact. Within an operant framework this implies, among other things, examining the consequences that maintain such behaviors. Only after identifying what events are reinforcing and punishing for individuals under given conditions, can one, based on an operant framework, make specific predictions and plan well-grounded interventions concerning the behavior of individuals. The distinction between informational and utilitarian consequences proposed by the BPM is a step in the direction of identifying what functions as reinforcers and punishers for consumers in general. This distinction has been useful in analyzing consumers' brand choice and verbal responses to different consumer settings.

The present paper applied such distinctions to analyses of some relevant classes of behavior related to environmental conservation, namely, use of private transportation, consumption of domestic energy, waste disposal, and domestic consumption of water. Each of these operant classes appears to be maintained by different levels of informational and utilitarian consequences, which suggests intervention plans should adopt differentiated and specific marketing strategies to modify each behavior class.

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